

REMARKS

Of the 23 original claims, claims 1, 2, 5, 9-11, 20, and 21 are amended. Claim 19 is canceled. Claim 1 was amended to essentially incorporate the limitation previously required in cancelled claim 19. With this response, claims 1-18 and 20-23 are now pending.

Applicants do not believe that any fees are due at this time; however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to this document, the Commissioner is authorized to deduct the fees from Howrey Simon Arnold & White, LLP Deposit Account No. 01-2508/12693.0014.00US00/BNT.

I. Objection to the drawings

The drawings were objected to as failing to include reference signs “67” and “53”.

Reference sign 67 has been added in corrected Figure 8. A redlined version and clean version of Figure 8 are included with this response.

The specification mistakenly referred to reference sign 53 as an outlet to the cooling ducts in the figures. However, 54 is the proper reference sign for an outlet to the cooling ducts as indicated in paragraph 31, line 6 and paragraph 27, line 2. The specification has been amended accordingly.

II. Objection to the specification

The specification is objected to due to three informalities. The Examiner suggested deleting “SPECIFICATION” at page 1, line 1. This has been deleted. The Examiner pointed out a typographical error at paragraph 6, line 2. This error has been corrected. The Examiner noted

that in the last line of paragraph 46, the word “slely” is ambiguous. This word has been replaced with “solely” to correct this typographical omission of a letter.

III. Examiner’s Suggestions to Claim Language

The Examiner made the following suggested changes to the claims in order to improve their clarity and precision. Applicants have made the suggested changes in this response.

The phrase “of passage” has been deleted from claim 5, line 3 and from claim 11, line 3. The word “high” has been inserted into claim 9, line 3 and into claim 10, line 2. The word “duct” has been changed to “ducts” in claim 10, lines 5 and 6.

IV. Rejection under 35 U.S.C. § 112, second paragraph

Claims 9-11, 14-15, 18, and 21 were rejected under 35 U.S.C. § 112, second paragraph as being allegedly indefinite in claiming the subject matter of the invention.

1. The Examiner indicated that claim 9 is inaccurate, as the intakes are provided adjacent to the leading edge, not at the leading edge. Claim 9 has been amended to reflect this relationship.
2. The Examiner noted that in claim 14, the openings 64 do not communicate with the intake cavity 15 through the cooling ducts 33. The Examiner indicated that openings 64 communicate with rear cavity 16 through outlets 61 in the cooling ducts 33, as shown in Figures 1 and 4.

Applicants respectfully disagree with the Examiner’s position regarding claim 14. Openings 64 do communicate with the intake cavity 16 through cooling ducts 33.

Cooling ducts 33 communicate with cavity 15. The cooling fluid can flow from cavity 15 through ducts 33. Secondary outlet 61 is through the inner wall, and opens into cavity 16.

Accordingly, openings 64 do communicate with intake cavity 15, by a path of cavity 16, outlet 61, and ducts 33. If necessary, Applicants can amend claim 14 to add these additional components if required by the Examiner.

3. The Examiner noted that claim 21 is inaccurate as it depends from claim 20 which recites that the turbulence generator means comprises plural ribs. Claim 21 indicates that the turbulence generator means comprises a number of incisions. The Examiner called attention to paragraph [0026] of the specification.

Applicants have amended claim 21 to depend from claim 1.

Applicants respectfully request that the rejections of claims 9-11, 14-15, 18, and 21 under 35 U.S.C. § 112, second paragraph be withdrawn.

V. Rejections under 35 U.S.C. § 102

1. Claims 1, 4-5, 12, 16, and 19-20 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Pyne, Jr. (U.S. Patent No. 3,574,481; hereinafter “Pyne”). Applicants respectfully traverse this rejection, as amended claim 1 contains limitations not disclosed, taught or suggested by Pyne. Specifically, claim 1 requires that the cooling ducts comprise turbulence generator means distributed along the inner wall and outer wall defining the cooling ducts. The Examiner alleged that Pyne’s ribs 13A, 14A, and 21A are turbulence generator means disposed in the cooling ducts. However, the Examiner also indicated that Pyne’s ribs 13A, 14A, and 21A are means for regulation of the flow rate. Pyne teaches that the ribs regulate the flow rate (column 3, lines 1-15). In addition, the ribs are not disposed along the inner and outer wall of the cooling ducts, but rather are positioned at two distinct locations. Applicant respectfully requests that the rejections of claims 1, 4-5, 12, 16, and 20 under 35 U.S.C. § 102 be withdrawn.

2. Claims 1, 4-9, 12, and 16-17 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Suzuki (U.S. Patent No. 4,697,985; hereinafter “Suzuki”). Applicant respectfully traverses this rejection, as amended claim 1 contains limitations not disclosed, taught or suggested by Suzuki. Specifically, claim 1 requires that the cooling ducts comprise turbulence generator means distributed along the inner wall and outer wall defining the cooling ducts. Suzuki fails to disclose, teach, or suggest a turbulence generator means distributed along the walls of the cooling ducts. Applicants therefore request that the Examiner reconsider and withdraw the § 102(b) rejection of claim 1 over Suzuki. Applicant respectfully requests that the rejections of claims 1, 4-9, 12, and 16-17 under 35 U.S.C. § 102 be withdrawn.

3. Claims 1-3, 12, and 16 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Brockmann (U.S. Patent No. 3,373,970; hereinafter “Brockmann”). Applicant respectfully traverses this rejection, as amended claim 1 contains limitations not disclosed, taught or suggested by Brockmann. Specifically, claim 1 requires that the cooling ducts comprise turbulence generator means distributed along the inner wall and outer wall defining the cooling ducts. Brockmann fails to disclose, teach, or suggest a turbulence generator means distributed along the walls of the cooling ducts. Applicant respectfully requests that the rejections of claims 1-3, 12, and 16 under 35 U.S.C. § 102 be withdrawn.

4. Claims 1, 12, and 16 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Morrison (U.S. Patent No. 6,709,230; hereinafter “Morrison”). Applicant respectfully traverses this rejection, as amended claim 1 contains limitations not disclosed, taught or suggested by Morrison. Specifically, claim 1 requires that the cooling ducts comprise turbulence generator means distributed along the inner wall and outer wall defining the cooling ducts. Morrison fails to disclose, teach, or suggest a turbulence generator means distributed

along the walls of the cooling ducts. Applicant respectfully requests that the rejections of claims 1, 12, and 16 under 35 U.S.C. § 102 be withdrawn.

5. Claims 1, 12-13, and 16-17 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Ito (U.S. Patent No. 4,946,346; hereinafter “Ito”). Applicant respectfully traverses this rejection, as amended claim 1 contains limitations not disclosed, taught or suggested by Ito. Specifically, claim 1 requires that the cooling ducts comprise turbulence generator means distributed along the inner wall and outer wall defining the cooling ducts. Ito fails to disclose, teach, or suggest a turbulence generator means distributed along the walls of the cooling ducts. Applicant respectfully requests that the rejections of claims 1, 12-13, and 16-17 under 35 U.S.C. § 102 be withdrawn.

6. Claims 1, 4-6, and 8-13 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Moore (U.S. Patent No. 3,246,469; hereinafter “Moore”). Applicant respectfully traverses this rejection, as amended claim 1 contains limitations not disclosed, taught or suggested by Moore. Specifically, claim 1 requires that the cooling ducts comprise turbulence generator means distributed along the inner wall and outer wall defining the cooling ducts. Moore fails to disclose, teach, or suggest a turbulence generator means distributed along the walls of the cooling ducts. Applicant respectfully requests that the rejections of claims 1, 4-6, and 8-13 under 35 U.S.C. § 102 be withdrawn.

VI. Rejection under 35 U.S.C. § 103

1. Claims 19-21 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Suzuki in view of Okpara (U.S. Patent No. 5,468,125; hereinafter “Okpara”). Claim 19 has

been cancelled. Claim 1 has been amended to essentially incorporate the limitation previously required in cancelled claim 19.

Claim 1 requires that the cooling ducts comprise turbulence generator means distributed along the inner wall and outer wall defining the cooling ducts. As noted by the Examiner, Suzuki fails to disclose “turbulence generator means disposed in the cooling ducts.” Furthermore, Suzuki specifically teaches away from having a turbulent flow in the cooling ducts. Suzuki states at column 2, lines 46–48 that the cooling ducts have a plurality of tiered slots “to attain a so-called film cooling effect.” Adding turbulence generators would interfere with the film cooling effect.

Okpara describes heat transfer ribs 52 extending generally parallel to the direction of flow of the cooling gas stream. It is unclear how these ribs extending parallel to the direction of flow would act as turbulence generator means.

Combining Suzuki and Okpara would not lead to the claimed subject matter. Additionally, Suzuki suggests a film cooling effect, which would likely be reduced or eliminated by the addition of turbulence in the ducts.

Applicants respectfully request that the rejection of claims 20-21 under 35 U.S.C. §103(a) be withdrawn.

2. Claim 22 was rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Suzuki in view of ‘506 (Japanese Patent 55-104,506; hereinafter “the ‘506 patent”).

As discussed above, Suzuki fails to disclose, teach, or suggest turbulence generator means distributed along the inner and outer walls of the cooling ducts. Likewise, the ‘506 patent fails to disclose, teach, or suggest a turbulence generator means distributed along the walls of the cooling ducts. Claim 22 depends from claim 1 and necessarily incorporates each limitation

therein. Therefore, claim 22 is allowable for at least the same reason as independent claim 1. Thus, Applicant respectfully requests that the rejection of claim 22 under 35 U.S.C. §103(a) be withdrawn.

3. Claim 23 was rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over either Suzuki, Pyne, or Brockmann in view of Weiler (U.S. Patent No. 4,314,971; hereinafter “Weiler”).


As discussed above, Suzuki, Pyne, and Brockmann each fail to disclose, teach, or suggest turbulence generator means distributed along the inner and outer walls of the cooling ducts. Likewise, Weiler fails to disclose, teach, or suggest a turbulence generator means distributed along the walls of the cooling ducts. Claim 23 depends from claim 1 and necessarily incorporates each limitation therein. Therefore, claim 23 is allowable for at least the same reason as independent claim 1. Thus, Applicant respectfully requests that the rejection of claim 23 under 35 U.S.C. §103(a) be withdrawn.

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In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding objections and rejections are respectfully requested. All amendments are made in a good faith effort to advance the prosecution on the merits. Applicants respectfully submit that no amendments have been made to the pending claims for the purpose of overcoming any prior art rejections that would restrict the literal scope of the claims or equivalents thereof. Applicants reserve the right to subsequently take up prosecution of the claims originally filed in this application in continuation, continuation-in-part, and/or divisional applications.

The Examiner is encouraged to call the undersigned should any further action be required for allowance.

Respectfully submitted,



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July 1, 2004